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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,439	08/14/2003	John H. Brophy	02-024	2458
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EXAMINER				
MCDONOUGH, JAMES E				
ART UNIT		PAPER NUMBER		
1793				
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01/30/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/642,439	<b>Applicant(s)</b> BROPHY ET AL.	
	<b>Examiner</b> James E. McDonough	<b>Art Unit</b> 1793	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 December 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3,5,7-9,11,24,28,32,34-43 and 45-53 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5, 7-9, 11, 24, 28, 32, 34-43, and 45-53 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3, 5, 7-9, 11, 24, 28, 34-39, 41-42, 47, and 49-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haswell et al., Lab on a Chip, 2001, vol. 1, pp. 164-166 in view of Tonkovich et al. (USP 6,488,838).

Although, Haswell et al. does not teach a microchannel with one wall that is adjacent to a heat transfer microchannel, Haswell et al. does teach using nickel and palladium (column 1, paragraph 1) with a Schiff base ligand that has oxo bridges and is chiral and tethered to a support (scheme1) wherein the support beads are porous (column 4, paragraph 6) and that heat transfer is improved in microreactors, but is silent as to how this heat transfer is achieved. However, because Tonkavich et al. teaches that when using microreactors with microchannels, a conventional way to achieve heat

transfer is to arrange a heat transfer microchannel adjacent to a reactor microchannel (column 6, lines 36-38), it would have been prima facie obvious to someone of ordinary skill in the art at the time the invention was made to, modify the teachings of Haswell et al., by incorporating a heat transfer microchannel adjacent to a reactor microchannel to facilitate heat transfer, as suggested by Tonkovich et al.

Although, Haswell is silent as to having a bulk flow because, Tonkovich teaches a bulk flow path, use with microreactors, it would have been prima facie obvious to one of ordinary skill in the art to select to use either a bulk flow path or a non-bulk flow path depending on the reaction to be carried out, and the skilled artisan would be expected to be able to select whether or not to use a bulk flow path to optimize the reactor conditions as this would be routine experimentation.

Claims 28, 32, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haswell et al., Lab on a Chip, 2001, vol. 1, pp. 164-166 in view of Tonkovich et al. (USP 6,488,838) as applied to claims 1, 3, 5, 7-9, 11, 24, 28, 34-39, 41-42, 47, and 49-53 above, and further in view of Hoveyda et al. (US 2004/0019212).

Although, Haswell et al. and Tonkovich et al. do not explicitly disclose a dendritic catalyst, they do teach the rest of the limitations of the instant claims. However, because Hoveyda et al. teaches the use of chiral organometallic/transition metal complex that can be in monomeric, polymeric, or dendritic form are stable and recyclable showing superior activity and stereoselectivity, it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the

teachings of Haswell et al., Tonkovich et al. and Hoveyda et al. with reasonable expectation of success and the expected benefit of catalyst reactors with high selectivity and stereoselectivity.

Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haswell et al., Lab on a Chip, 2001, vol. 1, pp. 164-166 in view of Tonkovich et al. (USP 6,488,838) as applied to claims 1, 3, 5, 7-9, 11, 24, 28, 34-39, 41-42, 47, and 49-53 above, and further in view of Kang (US Patent No. 3,993,855).

Although, Haswell et al. and Tonkovich et al. do not explicitly disclose the specific Ni, Rh, or Ir catalyst, they do teach the rest of the limitations of the instant claims. However, because Kang teaches the use of  $\text{RhH}(\text{CO}(\text{PPh}_3)_3)$  and that it provides selective hydrogenation (column 1, lines 41-45), it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the teachings of Kang with that of Haswell et al. and Tonkovich et al. with a reasonable expectation of success and the expected benefit of forming a selective catalyst system.

Claims 43, 45, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haswell et al., Lab on a Chip, 2001, vol. 1, pp. 164-166 in view of Tonkovich et al. (USP 6,488,838) as applied to claims 1, 3, 5, 7-9, 11, 24, 28, 34-39, 41-42, 47, and 49-53 above, and further in view of Chapman, Jr. et al. (US 2002/0182603).

Although, Haswell et al. and Tonkovich et al. do not explicitly disclose the chloro propyl silanes/amines, they do teach the rest of the limitations of the instant claims.

However, because Chapman, Jr. et al. teaches the use of chlorpropylsilane and amino propyl linkers that link a substrate with a support and that such substrate surfaces feature a uniform distribution of attachment functionality (abstract, scheme 1, and paragraph 0039), it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine the teachings of Chapman, Jr. with that of Haswell et al. and Tonkovich et al. with a reasonable expectation of success and the expected benefit of uniform distribution of catalyst moieties.

Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haswell et al., Lab on a Chip, 2001, vol. 1, pp. 164-166 in view of Tonkovich et al. (USP 6,488,838) as applied to claims 1, 3, 5, 7-9, 11, 24, 28, 34-39, 41-42, 47, and 49-53 above, and further in view of Ostoja-Starzewski et al. (US 2003/0036474).

Although, Haswell et al. and Tonkovich et al. do not explicitly disclose the use of metallocene, they do teach the rest of the limitations of the instant claims. However, because Ostoja-Starzewski et al. teaches the use of tethered (linked) metallocenes and that these catalyst allow the formation of defect free polyethylene to a degree not achieved with conventional catalyst, it would have been obvious to someone of ordinary skill in the art at the time of the invention was made to combine the teachings of Ostoja-Starzewski et al. with that of Haswell et al. and Tonkovich et al. with a reasonable expectation of success and the expected benefit of forming a catalyst that can produce defect free polyethylene.

### **Response to Arguments**

Applicants argue that Haswell teaches a packed column and they have found unexpected results using a bulk flow path while conducting the "Knoevenagel" reaction vs. the results with a packed column. This is not persuasive because: 1.) The reference to Tonkovich clearly teaches the use of a bulk flow path and the skilled artisan would be expected be able to determine through routine experimentation whether a packed column or bulk flow path gives better results depending the reaction to be performed. 2.) The results are not submitted in declaration form. 3.) The results are not commensurate in scope with the claimed invention. 4.) All the claimed elements are known elements in the art of microreactors and just because applicants get better results with one configuration vs. another in one type of reaction does not show novelty or unobviousness.

Applicants argue that claim 28 is allowable because none of the reference suggest the desirability of a chiral auxiliary. This is not persuasive because the office action clearly shows that Hoveyda teaches the use of chiral auxiliaries and that they are recyclable and show superior activity and stereoselectivity as these are the reasons one would choose to use a more expensive chiral reagent vs. a racemic one, applicants are respectfully requested to read the action before responding to it.

### **Conclusion**

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James E. McDonough whose telephone number is (571)272-6398. The examiner can normally be reached on 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571)272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

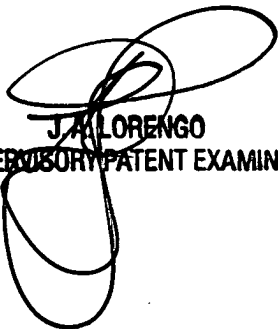


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JEM 1/25/2008

  
J. A. LORENGO  
SUPERVISORY PATENT EXAMINER